

SECTION 609 - CURB

609.01 Description Construct or reset curb, gutter, or combination curb and gutter, paved ditch, and paved flume. The types of curb are designated as follows:

- Type 1 - Stone curbing of quarried granite stone
- Type 2 - Precast Portland Cement Concrete Curbing
- Type 3 - Bituminous curbing
- Type 5 - Stone edging of quarried granite stone

609.02 Materials Except as provided below, the materials used shall meet the requirements of the following Sections of Division 700 - Materials:

Joint Mortar	705.02
Reinforcing Steel	709.01
Portland Cement Concrete for Concrete Curb	712.03
Stone Curbing and Edging	712.04
Epoxy Resin	712.35
Bituminous Curbing	712.36

Circular curb, terminal sections and transition sections shall be in reasonably close conformity with the shape and dimensions shown on the plans and to the applicable material requirements herein for the type of curb specified.

Dowels shall be reinforcing steel deformed bars.

609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections

a. Installation The curb stone shall be set on a compacted foundation so that the front top arris line conforms to the lines and grades required. The foundation shall be prepared in advance of setting the stone by grading the proper elevation and shaping to conform as closely as possible to the shape of the bottom of the stone. The required spacing between stones shall be assured by the use of an approved spacing device to provide an open joint between stones of at least 6 mm [$\frac{1}{4}$ in] and no greater than 15 mm [$\frac{1}{2}$ in].

b. Backfilling All remaining spaces under the curb shall be filled with approved material and thoroughly hand tamped so the stones will have a firm uniform bearing on the foundation for the entire length and width. Any remaining excavated areas surrounding the curb shall be filled to the required grade with approved materials. This material shall be placed in layers not exceeding 200 mm [8 in] in depth, loose measure and thoroughly tamped.

When backfill material infiltrates through the joints between the stones, small amounts of joint mortar or other approved material shall be placed in the back portion of the joint to prevent such infiltrating.

c. Protection The curb shall be protected and kept in good condition. All exposed surfaces smeared or discolored shall be cleaned and restored to a satisfactory condition or the curb stone removed and replaced.

d. Curb Inlets Curb placed adjacent to curb inlets shall be installed with steel dowels cemented into each stone with epoxy grout as shown in the Standard Details.

The epoxy grout shall be used in accordance with the manufacturer's instructions. The grout shall be forced into the hole, after which the dowel shall be coated with grout for one-half its length and inserted into the grout filled hole. The hole shall be completely filled with grout around the dowel. All tools and containers must be clean before using.

609.04 Bituminous Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. String or chalk lines shall be positioned on the prepared base to provide guide lines. The foundation shall be uniformly painted with tack coat at a rate of 0.2 to 0.7 L/m² [0.04 to 0.14 gal/yd²].

b. Placing The curb shall be placed by an approved power operated extruding type machine using the shape mold called for. A tight bond shall be obtained between the base and the curb. The Resident may permit the placing of curbing by other than mechanical curb placing machines when short sections or sections with short radii are required. The resulting curbing shall conform in all respects to the curbing produced

by the machine.

c. Sealing The curb will be sealed with bituminous sealing compound, only when directed by the Resident, in accordance with Section 612 - Bituminous Sealing. Before sealing, the curb shall be clean, dry and shall have reached the ambient temperature.

d. When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed with bituminous sealing compound.

e. Acceptance Curb may be accepted or rejected based on appearance concerning texture, alignment, or both. All damaged curb shall be removed and replaced at the Contractor's expense.

f. Polyester fibers shall be uniformly incorporated into the dry mix at a rate of 0.25 percent of the total batch weight. Certification shall be provided from the supplier with each shipment meeting the following requirements:

Average Length	6.35 mm \pm 0.127 [0.25 in \pm 0.005]
Average Diameter	20 μ m \pm 2.5 [0.0008 in \pm 0.0001]
Specific Gravity	1.32-1.40
Melting Temperature	250 °C [480 °F] Minimum
Color	Natural (White)

609.06 Stone Edging The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Slope The edging shall be set on a slope as shown on the plans or as directed.

b. Joints Joints shall be open and not greater than 40 mm [1½ in] in width.

609.07 Stone Bridge Curb

a. Installation Each stone and the bed upon which it is to be placed shall be cleaned and thoroughly wetted with water before placing the mortar for bedding and

setting the stone. The stone shall be set on a fresh bed of joint mortar and well bedded before the mortar has set so that the front top arris line conforms to the line and grade required. Whenever temporary supporting wedges or other devices are used in setting the stones, they shall be removed before the mortar in the bed has become set, and the holes left by them shall be filled with mortar. Concrete behind the stones shall not be placed until the stones have been in place at least two days. Bedding and pointing mortar for joints shall be cured as required under Section 502 - Structural Concrete.

b. Joints Vertical joints shall be 13 mm [$\frac{1}{2}$ in] in width plus or minus 3 mm [$\frac{1}{8}$ in]. Whenever possible, the face and top of the joint shall be pointed with joint mortar to a depth of 40 mm [$1\frac{1}{2}$ in], before the bedding mortar has set. Joints which cannot be so pointed, shall be prepared for pointing by raking them to a depth of 40 mm [$1\frac{1}{2}$ in] before the mortar has set. Joints not pointed at the time the stone is laid shall be thoroughly wetted with clean water and filled with mortar. The mortar shall be well driven into the joint and finished with an approved pointing tool, flush with the pitch line of the stones.

609.08 Resetting Stone or Portland Cement Concrete Curb, Including Terminal Sections and Transitions

The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Removal of Curbing The Contractor shall carefully remove and store curb specified on the plans or designated for resetting. Curb damaged or destroyed, because of the Contractor's operations or because of their failure to store and protect it in a manner that would prevent its loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

b. Cutting and Fitting Cutting or fitting necessary in order to install the curbing at the locations directed shall be done by the Contractor.

609.09 Method of Measurement Curb, both new and reset, will be measured by the meter [linear foot] along the front face of the curb at the elevation of the finished pavement, complete in place and accepted. Curb inlets at catch basins, including doweling, will not be measured for payment but shall be considered included in the cost of the catch basin. New transition sections and terminal curb will be measured by the unit. Reset transition

sections and terminal curb will be included in the measurement for resetting curb.

609.10 Basis of Payment The accepted quantities of curbing will be paid for at the contract unit price per meter [linear foot] for each kind and type of curbing as specified.

Payment for terminal curb shall include only that portion of the curbing modified for installation at ends of curb runs shown in the Standard Details. Curb adjacent to terminal ends shall be paid for at the contract unit price per meter [linear foot] for the type of curb installed.

Vertical Curb Type 1 and Type 2 required to have a radius of 20 m [60 ft] or less, will be paid for as Vertical Curb Type 1 - Circular.

Curb, Type 5 required to have a radius of 10 m [30 ft] or less will be paid for as Curb Type 5 - Circular.

There will be no separate payment for cement, reinforcing steel, anchors, tack coat, drilling for and grouting anchors, pointing and bedding of curbing, and for cutting and fitting, but these will be considered included in the work of the related curb.

Removal of existing curb and necessary excavation for installing new or reset curbing will not be paid for directly, but shall be considered to be included in the appropriate new or reset curb pay item. Base and Subbase material will be paid for under Section 304 - Aggregate Base and Subbase Course. Backing up bituminous curb is incidental to the curb items.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
609.11 Vertical Curb Type 1	meter [Linear Foot]
609.12 Vertical Curb Type 1 - Circular	meter [Linear Foot]
609.13 Vertical Bridge Curb Type 1	meter [Linear Foot]
609.131 Vertical Bridge Curb Type 1A	meter [Linear Foot]
609.132 Vertical Bridge Curb Type 1B	meter [Linear Foot]
609.142 Vertical Bridge Curb Type 1B - Circular	meter [Linear Foot]
609.15 Sloped Curb Type 1	meter [Linear Foot]

609.151	Sloped Curb Type 1 - Circular	meter [Linear Foot]
609.19	Vertical Curb - Type 2	meter [Linear Foot]
609.20	Vertical Curb - Circular-Type 2	meter [Linear Foot]
609.23	Terminal Curb Type 1	Each
609.234	Terminal Curb Type 1 - 1.2 m [4 ft]	Each
609.237	Terminal Curb Type 1 - 2.1 [7 ft]	Each
609.2371	Terminal Curb Type 1 - 2.1 [7 ft] - Circular	Each
609.238	Terminal Curb Type 1 - 2.4 m [8 ft]	Each
609.244	Terminal Curb-Type 2 - 1.2 m [4 ft]	Each
609.247	Terminal Curb-Type 2 - 2.1 m [7 ft]	Each
609.26	Curb Transition Section B Type 1	Each
609.31	Curb Type 3	meter [Linear Foot]
609.34	Curb Type 5	meter [Linear Foot]
609.35	Curb-Type 5 - Circular	meter [Linear Foot]
609.38	Reset Curb Type 1	meter [Linear Foot]
609.39	Reset Curb Type 2	meter [Linear Foot]
609.40	Reset Curb Type 5	meter [Linear Foot]

SECTION 610 - STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION

610.01 Description This work shall consist of excavating for and constructing a protective covering of stone. The types of protective covering of stone are designated as follows:

- a. Stone fill Machine placed embankment for fill slope
- b. Plain Riprap Machine placed stones on earth bedding
- c. Hand Laid Riprap Hand placed stones on earth bedding
- d. Stone Blanket Machine placed stones around piers and Abutments
- e. Heavy Riprap Machine placed stones on earth bedding
- f. Stone Ditch Protection Machine placed ditch protection of rock

610.02 Materials Materials shall meet the requirements of the following Sections of Division 700 - Materials:

Stone Fill

703.25